WHAT IS CLAIMED IS:

1. A method for treating cancer comprising administering to a subject in need of such treatment a therapeutically effective amount of

(a) a member selected from an inhibitor of inosine monophosphate dehydrogenase (IMPDH), an enantiomer of such a compound, a prodrug of such a compound, a pharmaceutically acceptable salt of such a compound, and combinations thereof; and

(b) an agent that inhibits a cellular process regulated by GTP or ATP.

2. The method of claim 1, wherein the agent that inhibits a cellular process regulated by GTP is selected from the group consisting of an inhibitor of α-tubulin polymerization, a prodrug therefor, a pharmaceutically acceptable salt thereof, and combinations thereof.

3. The method of claim 2, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

4. The method of claim 2, wherein the α-tubulin polymerization inhibitor is selected from the group consisting of indanocine, indanrorine, vincristine, vinblastine, vinorelbine, combretastatin-A, and colchicine.

5. The method of claim 2, wherein the IMPDH inhibitor is mizoribine and the α-tubulin polymerization inhibitor is indanocine.

6. The method of claim 2, wherein the cancer is a slow growing cancer.

7. The method of claim 6, wherein the slow growing cancer has a high rate of α-tubulin turnover.

8. The method of claim 6, wherein the slow growing cancer is selected from the group consisting of chronic lymphocytic leukemia, chronic myelogenous leukemia, non-Hodgkins lymphoma, multiple myeloma, chronic

granulocytic leukemia, cutaneous T cell lymphoma, low grade lymphomas, slow growing breast cancer, slow growing prostate cancer, and slow growing thyroid cancer.

9. A composition for treating cancer in a subject in need of such treatment comprising therapeutically effective amounts of

(a) a member selected from an inhibitor of inosine monophosphate dehydrogenase (IMPDH), an enantiomer of such a compound, a prodrug of such a compound, a pharmaceutically acceptable salt of such a compound, and combinations thereof; and

(b) an agent that inhibits a cellular process regulated by GTP or ATP.

10. The composition of claim 9, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from an inhibitor of α-tubulin polymerization, a prodrug therefor, or a pharmaceutically acceptable salt thereof, and combinations thereof.

11. The composition of claim 10, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

12. The composition of claim 10, wherein the α-tubulin polymerization inhibitor is selected from the group consisting of indanocine, vincristine, vinblastine, vinorelbine, combretastatin-A, and colchicine.

13. The composition of claim 10, wherein the IMPDH inhibitor is mizoribine and the α-tubulin polymerization inhibitor is indanocine.

14. The method of claim 1, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from a precursor of 9-beta-D-arabinofuranosylguanine 5'-triphosphate (Ara-GTP), a prodrug therefore, a pharmaceutically acceptable salt thereof, and combinations thereof.

15. The method of claim 14, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

16. The method of claim 14, wherein the precursor of Ara-GTP is selected from the group consisting of guanine arabinoside (Ara-G) and Nelarabine.

17. The method of claim 14, wherein the cancer is a lymphoma or a leukemia.

18. The composition of claim 9, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from a precursor of Ara-GTP, a prodrug therefor, or a pharmaceutically acceptable salt thereof, and combinations thereof.

19. The composition of claim 18, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

20. The composition of claim 18, wherein the precursor of Ara-GTP is selected from the group consisting of guanine arabinoside (Ara-G) and Nelarabine.

21. The method of claim 1, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from an inhibitor of the *de novo* pathway of purine biosynthesis, a prodrug therefor, or a pharmaceutically acceptable salt thereof, and combinations thereof.

22. The method of claim 21, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

23. The method of claim 21, wherein the IMPDH inhibitor is mizoribine.

24. The method of claim 21, wherein the IMPDH inhibitor is mizoribine aglycone.

25. The method of claim 21, wherein the inhibitor of the *de novo* pathway of purine biosynthesis is selected from the group consisting of L-alanosine, methotrexate, trimetrexate, 10-propargyl-5,8-dideazafolic acid (PDDF), *N*-[5-[*N*-(3,4-dihydro-2-methyl-4-oxoquinazolin-6-ylmethyl)-*N*-methylamino]-2-thenoyl]-L-glutamic acid (ZD1694, Tomudex), *N*-[4-[2-(2-amino-3,4-dihydro-4-oxo-7*H*-pyrrolo[2,3-*d*]-

pyrimidin-5-yl)ethyl]-benzoyl]-L-glutamic acid (LY231514), 6-(2'-formyl-2'naphthyl-ethyl)-2-amino-4(3*H*)-oxoquinazoline (LL95509), (6*R,S*)-5,10-dideazatetrahydrofolic acid (DDATHF), 4-[2-(2-amino-4-oxo-4,6,7,8-tetrahydro-3*H*pyrimidino[5,4,6][1,4]-thiazin-6yl)-(*S*)-ethyl]-2,5-thienoylamino-L-glutamic acid (AG2034), and *N*-[5-(2-[(2,6-diamino-4(3*H*)-oxopyrimidin-5-yl)thio]ethyl)thieno-2-yl]-L-glutamic acid (AG2009).

26. The method of claim 21, wherein the cancer comprises a population of cells deficient in the enzyme methyladenosine phosphorylase (MTAP).

27. A method for treating cancer in a subject in need of such treatment, wherein the cancer comprises of a population of cells deficient in the enzyme methlyadenosine phosphorylase (MTAP), comprising:

administering to the subject a therapeutically effective amount of a member selected from an inhibitor of inosine monophosphate dehydrogenase (IMPDH), an enantiomer of such a compound, a prodrug of such a compound, a pharmaceutically acceptable salt of such a compound, and combinations thereof.

28. The method of claim 27, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

29. The method of claim 27, wherein the IMPDH inhibitor is mizoribine.

30. The method of claim 27, wherein the IMPDH inhibitor is mizoribine aglycone.

31. The composition of claim 9, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from an inhibitor of the de novo pathway of purine biosynthesis, a prodrug therefor, a pharmaceutically acceptable salt thereof, and combinations thereof.

32. The composition of claim 31, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

33. The composition of claim 31, wherein the inhibitor of the de novo pathway of purine biosynthesis is selected from the group consisting of L-alanosine, methotrexate, trimetrexate, 10-propargyl-5,8-dideazafolic acid (PDDF), *N*-[5-[*N*-(3,4-dihydro-2-methyl-4-oxoquinazolin-6-ylmethyl)-*N*-methylamino]-2-thenoyl]-L-glutamic acid (ZD1694, Tomudex), *N*-[4-[2-(2-amino-3,4-dihydro-4-oxo-7*H*-pyrrolo[2,3-*d*]-pyrimidin-5-yl)ethyl]-benzoyl]-L-glutamic acid (LY231514), 6-(2'-formyl-2'naphthyl-ethyl)-2-amino-4(3*H*)-oxoquinazoline (LL95509), (6*R,S*)-5,10-dideazatetrahydrofolic acid (DDATHF), 4-[2-(2-amino-4-oxo-4,6,7,8-tetrahydro-3*H*pyrimidino[5,4,6][1,4]-thiazin-6yl)-(*S*)-ethyl]-2,5-thienoylamino-L-glutamic acid (AG2034), and *N*-[5-(2-[(2,6-diamino-4(3*H*)-oxopyrimidin-5-yl)thio]ethyl)thieno-2-yl]-L-glutamic acid (AG2009).

34. The composition of claim 31, wherein the inhibitor of the de novo pathway of purine biosynthesis is L-alanosine.

35. The method of claim 1, wherein the agent that inhibits a cellular process regulated by GTP is an antagonist of a G-protein coupled receptor (GPCR).

36. The method of claim 35, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

37. The method of claim 35, wherein the GPCR antagonist is selected from the group consisting of atrasentan, leuprolide, goserelin, and octreotide.

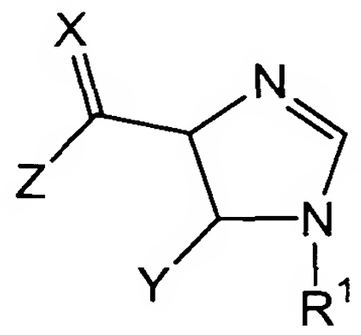
38. The method of claim 35, wherein the cancer is prostate cancer.

39. The composition of claim 9, wherein the agent that inhibits a cellular process regulated by GTP is a member selected from an antagonist of a G-protein coupled receptor (GPCR), a prodrug therefor, or a pharmaceutically acceptable salt thereof.

40. The composition of claim 39, wherein the IMPDH inhibitor is selected from the group consisting of mizoribine, mizoribine aglycone, mycophenolate mofetil, tiazofurin, viramidine, and ribivarin.

41. The composition of claim 39, wherein the GPCR antagonist is selected from the group consisting of atrasentan, leuprolide, goserelin, and octreotide.

42. A compound having the formula:



wherein

R^1 is a member selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and saccharyl moieties;

X is a member selected from O, S and NR^2

in which

R^2 is a member selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, OH and NH_2;

Y is a member selected from OR^3 and NHR^3

in which

R^3 is a member selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, acyl and $P(O)OR^{12}R^{13}$

wherein

R^{12} and R^{13} are members independently selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, acyl, acyloxyalkyl, and a single bond to an oxygen of said saccharyl of R^1;

Z is a member selected from NR^4R^5, OR^4 and SR^4

in which

R^4 is a member selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, a single bond to R^3 and acyl;

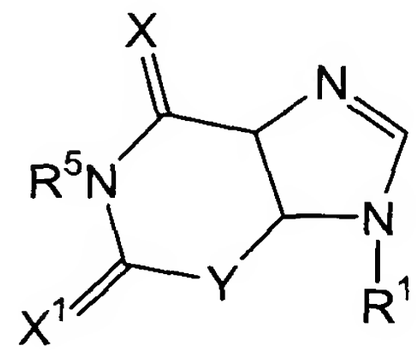
R^5 is a member selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, acyl,

acyloxycarbonyl, amino acid, peptidyl and acyloxyalkyl moieties; and

R^3 and R^4, together with the atoms to which they are attached, are optionally joined to form a 6-membered heterocyclic ring;

when R^3 is $P(O)OR^{12}R^{13}$, and R^1 is a saccharyl moiety, R^{13} and said saccharyl moiety and the atoms to which they are attached are optionally joined to form an 8-membered heterocyclic ring, with the proviso that said compound includes at least one of said 6-membered or said 8-membered heterocyclic ring system.

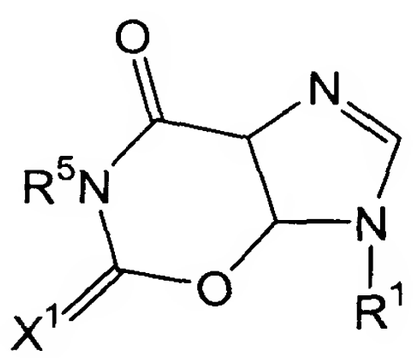
43. The compound according to claim 42, having the formula:



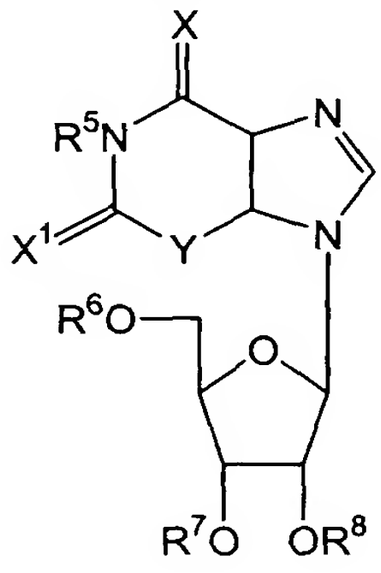
in which

X^1 is a member selected from O and S.

44. The compound according to claim 43, having the formula:



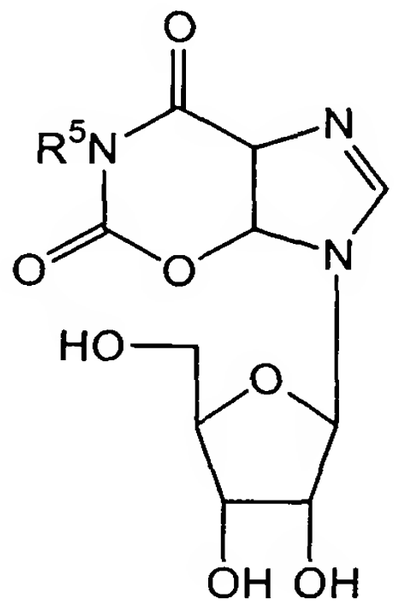
45. The compound according to claim 43 having the formula:



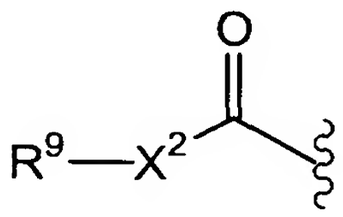
wherein

R^6, R^7 and R^8 are members independently selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl and acyl moieties.

46. The compound according to claim 45 having the formula:



47. The compound according to claim 42, wherein R^5 has the formula:



wherein

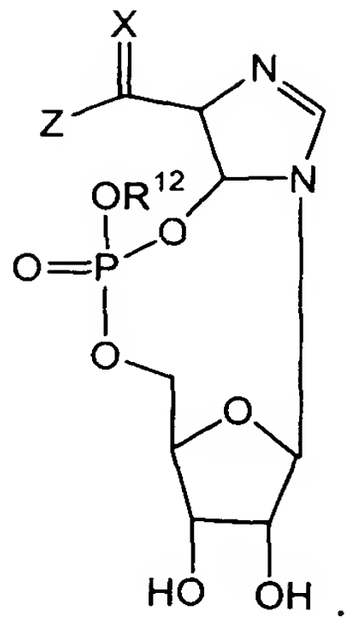
X^2 is a member selected from O, $CHR^{10}R^{11}$, and OC(O)

wherein

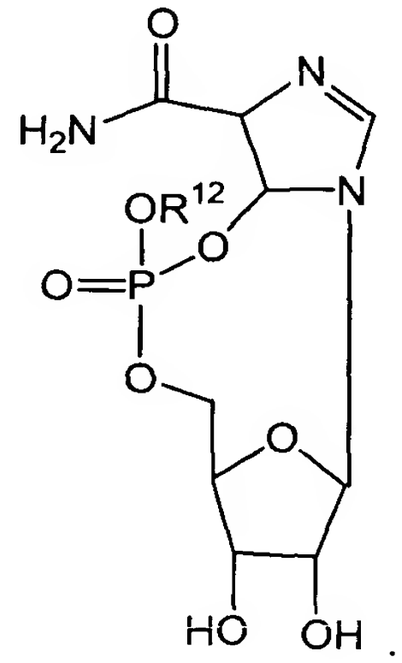
R^{10} and R^{11} are members independently selected from H, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, NH_2, NH_3^+, COOH, COO^-, OH, and SH; and

R^9 is a member selected from H, substituted or unsubstituted alkyl, and substituted or unsubstituted heteroalkyl.

48. The compound according to claim 42 having the formula:



49. The compound according to claim 48, having the formula:



50. A pharmaceutical formulation comprising a compound according to claim 42 and a pharmaceutically acceptable carrier.

51. A method for treating cancer comprising administering to a subject in need of such treatment a compound selected from the group consisting of mizoribine, mizoribine aglycone, prodrugs of mizoribine, and prodrugs of mizoribine aglycone , wherein the compound is administered in an amount sufficient to maintain a plasma level of the compound of between 0.5 and 50 micromolar for between 6 and 72 hours.

52. The method of claim 51, wherein the plasma level of compound is between 1 and 30 micromolar for between 8 and 48 hours.

53. The method of claim 51, wherein the plasma level of compound is between 5 and 25 micromolar for between 10 and 24 hours.

54. The method of claim 51, wherein the plasma level of compound is at least 10 micromolar for at least 12 hours.

55. The method of claim 51, wherein the compound comprises a pharmaceutically acceptable carrier.

56. The method of claim 51, wherein the compound is administered parenterally.

57. The method of claim 51, wherein the compound is administered orally.

58. The method of claim 51, wherein the compound is described by the formula of claim 42.

59. A method of treating an immune system condition by providing an immunosupressive agent, the method comprising administering to a subject in need of such treatment a therapeutically effective amount of a compound described by the formula of claim 42.

60. The method of claim 59, wherein the compound comprises a pharmaceutical carrier.

61. The method of claim 59, wherein the immune system condition is rejection of a transplanted organ.

62. The method of claim 59, wherein the immune system condition is an autoimmune disease.